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were made, and thus tracing the Causes of Failure to their true sources." Of this "Retrospect," we may say generally that its author condemns in succession every prominent feature of the commanding general's plan and conduct. He assigns, as prominent among the causes of ultimate failure, the inaction of eight months, from August, 1861, to April, 1862, the adoption of the wrong line of operations against Richmond, the decision not to assault the lines of Yorktown, the failure to open our batteries on the place as fast as they were completed, the "blunder" of the battle of Williamsburg, the subsequent adhesion to the York, instead of connecting with the navy on the James, the slowness of the movement to the Chickahominy, the omission to take advantage of the repulse of the rebels at Fair Oaks, and the fault committed in not concentrating our army on one bank of the Chickahominy on the night before the battle of June 27th, 1862.

It must be borne in mind, that all these positive statements have been before the public for a long time, and have received no authoritative explanation, contradiction, or answer, until the publication of General McClellan's Report. The attentive reader will naturally compare the Reports of the commanding general and of his chief engineer.

The Peninsular campaign has long been ended, and we are gradually collecting materials which will enable us to form or correct our judgments of the ability with which the General commanding the Union forces planned and conducted it. General Barnard's Report will always hold a prominent place among these materials. The accomplishments and official position of the author, his clear style, his distinct and positive statements, the moderateness of his personal claims, and the generosity of his praise of the juniors of his corps, unite to entitle it to such a place.

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12. — *A Manual of Spherical and Practical Astronomy.* By WILLIAM CHAUVENET, LL. D., Chancellor of Washington University, St. Louis, Mo. Philadelphia: J. B. Lippincott & Co.

THIS work of Professor Chauvenet will hold a high place among the works of American astronomers. Admirably adapted to the wants of American students, whose access to astronomical libraries and to memoirs in foreign languages is necessarily very limited, this work contains a fuller discussion of a greater number of problems in the sciences of astronomical observation and calculation, than have ever before been presented in a connected form in any language; and it cannot fail to be of the greatest service in stimulating to increased activity the astronomical talent of this country.

In all the mechanical appliances of astronomy we have availed ourselves of the best work of the age, and in the invention of instruments and methods of observation have even won applause from European astronomers; while in that skill of workmanship which is competent to the construction of the finest instruments, our countrymen have latterly begun to rival European artists. During the last thirty years, more than twenty observatories — several of the first class — have been erected and equipped in this country, and many valuable astronomical publications, in annals, memoirs, and journals, prove the industry of our scholars. The patronage of Congress, in establishing the National Observatory, in perfecting our admirably conducted Coast Survey, and in the publication of the American Ephemeris and Nautical Almanac, attests the interest of our people in this — we might almost say — our favorite national science.

Scholarship in this science has not, however, been so successfully cultivated among us as the inferior kinds of skill, and few of our countrymen have been able to make available to our students the best thoughts — the labors of genius — in the higher branches of the science. We ought, therefore, to welcome such services as Professor Chauvenet has performed for us with the greater satisfaction.

In the work upon *Plane and Spherical Trigonometry*, by Professor Chauvenet, published in 1850, embracing the latest improvements and most elegant theorems of that branch of mathematics, we had an assurance of the ability which the present work demanded, and of that fidelity which has in the present work given us, in a most luminous and accessible form, the improvements in the trigonometrical methods of astronomy which we owe to the great German astronomers of the present century.

But besides the scholarly labor of compiling this material, Professor Chauvenet has given us in his first volume evidence of no ordinary originality, in several new methods of treating problems in Spherical Astronomy. This is shown in his treatment of the problems of Eclipses and Occultations, and in several problems relating to Navigation.

An Appendix to the second volume contains an exposition of the *Method of Least Squares*, — that numerical method of dealing with the values of observed quantities, by which, in modern physical inquiries, the accidental errors of many observations are made to cancel each other in the final results. This method is here for the first time presented to American students with full and clear explanations, and with such exemplifications as make evident the value of this important instrument of physical research.